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UNITED STATES PATENT APPLICATION FOR

METHOD OF SOFTWARE DISTRIBUTION BETWEEN PORTABLE COMPUTER
SYSTEMS

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METHOD OF SOFTWARE DISTRIBUTION BETWEEN PORTABLE COMPUTER SYSTEMS

5   FIELD OF THE INVENTION

Embodiments of the present invention relate to hand held computer systems. More particularly, embodiments of the present invention provide a method and apparatus for distributing software used on hand held computer systems.

10   BACKGROUND ART

The success of the hand held computer has resulted in an explosion of available software programs for use on hand held computers. For example, Palm, Inc. reports that over 11,000 commercial software applications are available for use on hand held computer systems running the Palm operating system. These 15   applications are available from a similar number of different sources.

Unfortunately, finding a particular application program to fit one's needs is typically an arduous process. Typically, a user may access, via a web browser on a desktop computer, a website devoted to hand held application software. A 20   search engine with access to information on some of the 11,000 application titles may help a user to narrow the available choices based on various criteria. If the user discovers an interesting application, he or she may select to preview a trial or demonstration version of the program. However, using this software distribution channel has drawbacks. Firstly, it is difficult to locate the desired software through 25   the vast amount of titles offered. Secondly, the download and synchronization

process can be challenging to novice users and involves an intermediate desk top computer system.

Generally, the program files may be downloaded from the website to the
5   user's desktop computer. If the user has all of the appropriate software (e.g., expansion utilities and synchronization software) installed on the desktop computer, the application program files may be scheduled to load at the next synchronization session between the desktop computer and the hand held computer.

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The user generally must then synchronize the desktop computer and the hand held computer. As a part of this process, the application program files may be transferred to the hand held computer. Importantly, the synchronization process is general, and typically transfers a wide variety and vast amount of
15   information between the two computer systems. The information transferred is not limited to the application program files, but may also include, for example, address list and date book entries that have changed on either system since the last synchronization. Consequently, the synchronization session may take longer than would be required simply to transfer the application program files.

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The requirement of the desktop computer system in this scenario places numerous obstacles in the path between a user wanting a function and an application program which may provide for those needs. First, the desktop computer must have the appropriate software installed and operational (e.g., web
25   browser, synchronization software, expansion software, web connectivity).

Secondly, the desktop computer must be connected to the internet. For the

majority of users, this remains a relatively slow dialup connection. The speed of

the connection may serve to impede a user's acceptance of this process. Finally,

the shear number of applications competing for exposure makes it difficult to find

5   the "good" ones.

Retail sale of software for hand held computers does not always apply or is

not always effective because software for hand held computers tends to be a

relatively low priced product. A retail market must change a high mark-up on

10   software to cover the retail overhead. As a result, retailers usually don't have the

motivation to reserve valuable shelf space for low priced software for hand held

computers.

SUMMARY OF THE INVENTION

Therefore, it would be advantageous to provide a method and system for the distribution of software for hand held computers that does not require an intermediate desktop computer. A further need exists for a method providing for

5   the distribution of software for hand held computers that does not require access to the internet or retail outlets. A still further need exists for a method of automatically collecting recommendations of other users for desirable application programs.

10   Embodiments of the present invention provide for the distribution of software for hand held computers without requiring an intermediate desktop computer. Still further embodiments of the present invention provide for the distribution of software for hand held computers without access to the internet or retail outlets. Yet other embodiments of the present invention provide for

15   automatically collecting recommendations of other users for desirable application programs.

A system and method for distributing software are disclosed. A user of a hand held computer may demark files on a first hand held computer system. The

20   user may also provide rating and summary information for the demarked files. The developer of the software title may also provide the summary information. The user may transfer this rating and summary information for the demarked files to a second hand held computer. The transfer may occur wirelessly. The user of the second hand held computer system may review the rating and summary

25   information. In response, the user of the second hand held computer system may

select to have copies of some of the demarked files transferred from the first

system to the second system. This transfer may occur wirelessly. In this novel

manner, a user may automatically provide both recommendations and

recommended software to other users, simultaneously improving both the quality

5   of software distribution and the number of paths of distribution.

Another embodiment of the present invention provides for transferring the

storage requirements for the demarked files.

10   In one embodiment of the present invention, a universal resource locator

related to the demarked files is transferred between the two hand held computer

systems.

In another embodiment of the present invention, the transfer takes place via

15   infrared light. In yet another embodiment of the present invention, the transfer

takes place via Bluetooth.

According to one embodiment of the present invention, a software title may

have a demonstration or trial version along with the fully function version. In

20   response to a request to transfer the program from the first hand held computer to

the second hand held computer, the demonstration or trial version only is

transferred according to the embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram of a computer system, which may be used as a platform to implement embodiments of the present invention.

5   Figure 2 illustrates a communication between a first wireless hand held computer and a second wireless hand held computer, according to an embodiment of the present invention.

Figure 3 illustrates a display screen as may be used by a user of a hand held computer system to demark files, according to an embodiment of the present invention.

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Figure 4 illustrates a flow diagram of a method for software distribution, according to an embodiment of the present invention.

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Figure 5 illustrates a display screen as may be used by a user of a second hand held computer system for selecting files.

Figure 5A illustrates a display image depicting exemplary summary information on a file, according to an embodiment of the present invention.

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Figure 6 illustrates a flow diagram of a method for software distribution, according to an embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

In the following detailed description of the present invention, method of
software distribution between portable computers, numerous specific details are
set forth in order to provide a thorough understanding of the present invention.

5   However, it will be recognized by one skilled in the art that the present invention
may be practiced without these specific details or with equivalents thereof. In
other instances, well-known methods, procedures, components, and circuits have
not been described in detail as not to unnecessarily obscure aspects of the
present invention.

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NOTATION AND NOMENCLATURE

Some portions of the detailed descriptions which follow (e.g., processes
200 and 500) are presented in terms of procedures, steps, logic blocks,
processing, and other symbolic representations of operations on data bits that can

15   be performed on computer memory. These descriptions and representations are
the means used by those skilled in the data processing arts to most effectively
convey the substance of their work to others skilled in the art. A procedure,
computer executed step, logic block, process, etc., is here, and generally,
conceived to be a self-consistent sequence of steps or instructions leading to a

20   desired result. The steps are those requiring physical manipulations of physical
quantities. Usually, though not necessarily, these quantities take the form of
electrical or magnetic signals capable of being stored, transferred, combined,
compared, and otherwise manipulated in a computer system. It has proven
convenient at times, principally for reasons of common usage, to refer to these

25   signals as bits, values, elements, symbols, characters, terms, numbers, or the like.

It should be borne in mind, however, that all of these and similar terms are to be associated with the appropriate physical quantities and are merely convenient labels applied to these quantities. Unless specifically stated otherwise

5   as apparent from the following discussions, it is appreciated that throughout the present invention, discussions utilizing terms such as "indexing" or "processing" or "computing" or "translating" or "calculating" or "determining" or "scrolling" or "displaying" or "recognizing" or "generating" or "demarking" or "transferring" or the like, refer to the action and processes of a computer system, or similar electronic

10   computing device, that manipulates and transforms data represented as physical (electronic) quantities within the computer system's registers and memories into other data similarly represented as physical quantities within the computer system memories or registers or other such information storage, transmission or display devices.

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METHOD OF SOFTWARE DISTRIBUTION BETWEEN PORTABLE COMPUTER SYSTEMS

Embodiments of the present invention are described in the context of a

20   hand held computer system. However, it is appreciated that the present invention may be utilized in other types of computer systems where it may be necessary or desirable to distribute the task of distributing application programs and/or data files.

Figure 1 is a block diagram of a portable, e.g., hand held, computer system

100, which may be used as a platform to implement embodiments of the present

invention. Computer system 100 includes an address/data bus 10 for

communicating information, a central processor 20 functionally coupled with the

5   bus for processing information and instructions, a volatile memory 30 (e.g.,

random access memory RAM) coupled with the bus 10 for storing information and

instructions for the central processor 20 and a non-volatile memory 25 (e.g., read

only memory ROM) coupled with the bus 10 for storing static information and

instructions for the processor 20. Computer system 100 also optionally includes a

10   changeable, non-volatile memory 35 (e.g., flash) for storing information and

instructions for the central processor 20 which can be updated after the

manufacture of system 100.

Also included in computer system 100 of Figure 1 is an optional

15   alphanumeric input device 45. Device 45 can communicate information and

command selections to the central processor 20. Device 45 may take the form of a

touch sensitive digitizer panel.

The optional display unit 40 utilized with the computer system 100 may be a

20   liquid crystal display (LCD) device, cathode ray tube (CRT), field emission device

(FED, also called flat panel CRT), light emitting diode (LED), plasma display

device, electro-luminescent display, electronic paper or other display device

suitable for creating graphic images and alphanumeric characters recognizable to

the user.

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Computer system 100 also optionally includes an expansion interface 50 coupled with the bus 10. Expansion interface 50 can implement many well known standard expansion interfaces, including without limitation the Secure Digital card interface, universal serial bus (USB) interface, Compact Flash, Personal

5 Computer (PC) Card interface, CardBus, Peripheral Component Interconnect (PCI) interface, mini-PCI interface, IEEE 1394, Small Computer System Interface (SCSI), Personal Computer Memory Card International Association (PCMCIA) interface, Industry Standard Architecture (ISA) interface, or RS-232 interface. It is appreciated that external interface 50 may also implement other well known or

10 proprietary interfaces, such as Memory Stick interface, commercially available from Sony Corporation.

In one embodiment of the present invention, expansion interface 50 may consist of signals substantially compliant with the signals of bus 10.

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A wide variety of well known expansion devices may be attached to computer system 100 via expansion interface 50. Examples of such devices include without limitation rotating magnetic memory devices, flash memory devices, digital cameras, wireless communication modules, digital audio players

20 and Global Positioning System (GPS) devices.

System 100 also optionally includes a communication port 55. Communication port 55 may be implemented as part of expansion interface 50. When implemented as a separate interface, communication port 55 may typically

25 be used to exchange information with other devices via communication-oriented

data transfer protocols. Examples of communication ports include without limitation RS-232 ports, universal asynchronous receiver transmitters (UARTs), USB ports, infrared light transceivers, ethernet ports, IEEE 1394 and synchronous ports.

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System 100 optionally includes a radio frequency module 60, which may implement a mobile telephone, a pager, or a digital data link. Radio frequency module 60 may be interfaced directly to bus 10, via communication port 55 or via expansion interface 50.

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System 100 optionally includes an infrared (IR) light signaling transceiver 70. IR transceiver 70 may typically be coupled to a communication port, for example communication port 55. It is appreciated that there are other well known arrangements of IR port 70, including connection directly to bus 10. IR port 70 may

15 serve to communicate with other computer systems over short range, line of sight paths. IR transceiver 70 may be compliant with Infrared Data Association (IrDA) standards.

Figure 2 illustrates a communication between a first wireless hand held
20 computer 120 and a second wireless hand held computer 150, according to an embodiment of the present invention. Both computer system 120 and 150 may be similar to hand held computer system 100. Computer system 120 and computer system 150 may be in wireless communication with each other. The wireless communication may be via radio, for example Bluetooth or IEEE 802.11, or via

25 infrared light. It is appreciated that other forms of communication, including well

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known wireless and wired forms of computer communication, are well suited to embodiments of the present invention.

Wireless communication 124 is a request from computer system 120 to computer system 150 for summary information on computer files stored on computer system 150. Files for which summary information is available may be application programs, operating system extensions, data sets and other well known computer file types. Wireless communication 124 may be a general or "broadcast" message intended for any hand held computer system within communication range. Wireless communication 124 may be automatically initiated in a variety of well know manners, for example in response to a Bluetooth inquiry message from hand held computer 150, a communication request from hand held computer 150 or on a periodic or random time basis. Wireless communication 124 may also be initiated in response to a user command.

In response to wireless communication 124, hand held computer 150 may respond with wireless communication 154. Wireless communication 154 may contain summary information on computer files stored on computer system 150. Wireless communication 154 may also be initiated in response to a user command.

Summary information contained in wireless communication 154 may include descriptive information regarding a set of files contained in device 150. This descriptive information may include rating information, computer file title, a user summary, summary and promotional information provided by the file

developer, a universal resource locator, URL, for further information on the file, file size, estimated transfer time for the file and other well known information about computer files.

5   A user of hand held computer 120 may review such summary information and select a subset of files listed as available on hand held computer 150 for transfer to hand held computer 120. Wireless communication 126, from hand held computer 120 to hand held computer 150, may be a request for a list of files to be transferred from hand held computer 150 to hand held computer 120.

10   Wireless communication 156, from hand held computer 150 to hand held computer 120, may be a transfer of requested computer files from hand held computer 150 to hand held computer 120. Wireless communication 156 may be initiated automatically in response to the receiving of wireless communication 126.

15   Wireless communication 156 may include demonstration or trial versions of application programs.

    Figure 3 illustrates a display screen 300 as may be used by a user of a hand held computer system, for example display unit 40 of hand held computer

20   system 100, to demark computer files. Demarking a computer file allows the demarked file to be included in the software distribution mechanisms of the present invention. Unmarked files may remain private, and are not eligible to be transferred via the process shown in Figure 2.

Display element 310 of Figure 3 may list available files, including application programs, operating system extensions and data set files, that are available on a first hand held computer. In the example of display image 300, the files are listed in a vertical column, including "BombJack," "Fileman," and "X-

5   Master."

Display element 320 may be a rating assigned to a corresponding file. For example, "BombJack" is depicted as having a rating of three stars. Rating may originate from users, developers, etc.

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Display element 330 may be the storage or memory requirements or "size" of the corresponding file. For example, "BombJack" is listed as requiring "146K." A typical unit of size may be bytes, or "K" (i.e. kilobytes = 1024 bytes).

15   Display element 340 may be an icon to indicate that there is additional information available for the corresponding file. For example, "Joust" is shown as having additional information available. Such additional information may include a user-generated summary of the file, e.g., "This is a really cool version of the well known game 'BomberMan.'" Additional information may also include material

20   from the originator of the file, e.g., the writer or developer of an application. Such information may include advertising material, e.g., "Plays Faster! Awe-Inspiring Graphics!," and a universal resource locator, URL, of the developer's website.

Display element 350 may be a "check box" associated with each available

25   file. A user may select, or demark, a file by touching the input device, for example

alpha-numeric input device 45, substantially over one the check boxes. Check box 360 illustrates a visual feedback of displaying a "check" symbol within the box in response to such a user touch action.

5   Figure 4 illustrates a flow diagram of a method 200 for software distribution, according to an embodiment of the present invention.

In step 210, a user may demark or select files on a first hand held computer system, for example by touching check boxes 350 of Figure 3. It is appreciated

10   that any well known method of selecting files on hand held or other types of computer systems may be used at this step.

In step 220, information about the files selected or demarked in step 210 may be transferred to a second hand held computer system. The information

15   transferred may include the file title, rating, file size, estimated transfer time, additional summary information such as user reviews, developer's comments and URLs. It is appreciated that transferring other types of information are also well suited to embodiments of the present invention. Importantly, the file itself is not generally transferred at this time.

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According to an embodiment of the present invention, the transfer of information in step 220 may be directly from a first hand held computer to a second hand held computer. According to another embodiment of the present invention, the transfer of information in step 220 may be indirect. For example,

25   summary information from, or originating with, a first hand held computer may be

transferred to a third hand held computer (not shown). In step 220, summary

information from the first hand held computer may be transferred from the third

hand held computer to a second hand held computer.

5   The amount of information about a file transferred at step 220 is typically

substantially smaller than the file itself. Consequently, it may take very much less

time to transfer compared to the file itself, and storing the received information

generally will not impose a burden on the receiving device.

10   Step 220 may be initialized by user action, either on the first hand held

computer system or on the second hand held computer system. According to an

embodiment of the present invention, this step may be automatically initiated

when the two systems are brought into communication range according to a

communication protocol. This automatic initiation is particularly well suited to

15   Bluetooth communications, but it is to be appreciated that other well known forms

of communication, including IR, IEEE 802.11 and RS-232, are well suited to

embodiments of the present invention.

          Figure 5 illustrates a display screen 400 as may be used by a user of a

20   second hand held computer system, for example display unit 40 of hand held

computer system 100, for selecting files.

          Display element 410 may list files, including application programs,

operating system extensions and data set files, that have been selected as

25   available by a user of a first hand held computer. Information for such a list may

have been transferred to a second hand held computer as a result of process 200. In the example of display image 400, the files are listed in a vertical column, including "BombJack," "Fileman," and "SFCave." This list may generally represent the information about files transferred from a first hand held computer system.

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Display element 420 may be a rating assigned to a corresponding file. For example, "BombJack" is depicted as having a rating of three stars.

Display element 430 may be the size of the corresponding file. For example, "BombJack" is listed as requiring "146K." A typical unit of size may be bytes.

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Display element 440 may be an icon to indicate that there is additional information available for the corresponding file. For example, "Joust" is shown as having additional information available. Such additional information may include a user-generated summary of the file, e.g., "This is a really cool version of the well known game 'BomberMan.'" Additional information may also include material from the originator of the file, e.g., the writer of an application. Such information may include advertising material, e.g., "Plays Faster! Awe-Inspiring Graphics!," and a universal resource locator, URL, of the developer's website.

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Figure 5A illustrates display image 480 depicting exemplary summary information on the file "Joust," as may be displayed in response to a user selecting additional information icon 440, according to an embodiment of the present

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invention. Display element 482 of image 480 may be a user generated summary or recommendation of the file.

Display element 484 may be a universal resource locator, URL, of an
5   internet web site containing more information on the file. Display element 486 may be an estimated transfer time for the particular file. Display element 488 may be the storage or memory requirements of the file.

Referring once again to Figure 5, display element 450 may be a "check box"
10   associated with each available file. A user may select, or demark, a file by touching the input device, for example alpha-numeric input device 45, substantially over one the check boxes. Check box 460 illustrates a visual feedback of displaying a "check" symbol within the box in response to such a user touch action.

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A user of a second hand held computer system may choose, or select from this listing files to be received from the first hand held computer system. In response to selecting files, the files that are selected by the user of the second hand held computer system may be automatically transferred from the first
20   computer system. The transfer may be initiated in response to marking the check box of each file, or the transfers may be consolidated by the user touching the "get" button 470 to complete his selection activity.

According to an embodiment of the present invention, one type of file that
25   may be received is a demonstration, trial or limited functionality version of an

application program. A "demo" version may provide limited function or a limited time of use to encourage a user to purchase the fully featured version of the application. Importantly, by transferring a demo version of an application as opposed to a fully featured version, many intellectual property rights of the

5   application developer may be maintained.

The demo version and/or other information transferred from the first hand held computer system to the second hand held computer system may include instructions on how to purchase or upgrade to a fully functional version of the

10   program. This frequently takes the form of a pointer to a universal resource locator, URL, of a developer's website.

Figure 6 illustrates a flow diagram of a method 500 for software distribution, according to an embodiment of the present invention.

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In step 210, a user may demark or select files on a first hand held computer system, for example by touching check boxes 350 of Figure 3. It is appreciated that there are other well known methods of selecting files on hand held or other types of computer systems.

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In step 220, information about the files selected or demarked in step 210 may be transferred to a second hand held computer system. The information transferred may include the file title, rating, file size, estimated transfer time, additional information such as user reviews, developer's comments and URLs. It

25   is appreciated that transferring other types of information are also well suited to

embodiments of the present invention. Importantly, the file itself is not generally transferred at this time.

The amount of information about a file will typically be of substantially less

5   size than the file itself. Consequently, it may take very much less time to transfer compared to the file itself, and storing the received information generally will not impose a burden on the receiving device.

Step 220 may be initialized by user action, either on the first hand held

10   computer system or on the second hand held computer system. According to an embodiment of the present invention, this step may be automatically initiated when the two systems are brought into communication range. This automatic initiation is particularly well suited to Bluetooth communications, but it is to be appreciated that other well known forms of communication, including IR, IEEE

15   802.11 and RS-232, are well suited to embodiments of the present invention.

In step 530, a user of a second hand held computer system may select files from a list of files transferred from a first hand held computer system. Typically, although not necessarily, such a user may base a selection choice on the

20   information transferred, such as a supplied user review. A display screen as shown in Figure 4 may facilitate this selection. However, it is to be appreciated that other well known means of selecting items from a list are well suited to embodiments of the present invention.

In step 540, the files selected by a user of a second hand held computer (step 530, above) may be automatically transferred to a second hand held computer system, if available. Typically, this file transfer is made using the same communication techniques as employed in step 220, although this is not required.

As discussed above in relation to process 200, according to an embodiment of the present invention, the transfer of information in step 220 may be directly from a first hand held computer to a second hand held computer. According to another embodiment of the present invention, the transfer of information in step 220 may be indirect. For example, summary information from, or originating with, a first hand held computer may be transferred to a third hand held computer (not shown). In step 220, summary information from the first hand held computer may be transferred from the third hand held computer to a second hand held computer.

In a similar manner, in step 540 selected files may be transferred to the second hand held computer from the third hand held computer. It is to be appreciated that the files transferred to the second hand held computer may not originate on the first hand held computer. For example, the third hand held computer may have obtained the selected files independently of the first hand held computer, for example via a website download.

According to another embodiment of the present invention,

In this novel manner, software, e.g., application programs, operating system extensions and data sets, may be distributed among a set of users. Prior to selection of files, a user will typically receive more pertinent information regarding such files that through prior art techniques. In addition, since the distribution of

5   information about the files may be automated, a user will generally have greater exposure to a wider variety of file offerings, e.g., the recommended computer files of many hand held users, rather than information filtered through a limited number of websites. Further, the actual distribution is performed automatically and without the complexities of intervening desktop computer systems or the internet.

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The preferred embodiment of the present invention, a system and method for software distribution, is thus described. While the present invention has been described in particular embodiments, it should be appreciated that the present invention should not be construed as limited by such embodiments, but rather

15   construed according to the below claims.

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